

In re Patent Application of:

ENRIQUEZ ET AL.

Serial No. 10/090,291

Filed: March 4, 2002

REMARKS

An editorial correction has been effected in Claim 15. Reconsideration of this application in light of the foregoing amendments and following remarks is respectfully requested.

The rejection of original Claims 1-20, under the provisions of 35 U.S.C. § 102, as allegedly being anticipated by the patent to Takato et al 4,631,366, is respectfully traversed.

Applicants have carefully reviewed the disclosure of the patent to Takato et al 4,631,366, but have been unable to find any correlation between what is recited in applicants' claims and what is disclosed in the cited patent. Taking Claim 15 as an example (since Claim 15 was selected in the Office Action as being representative), the present invention is recited as circuit arrangement for limiting the DC voltage applied to tip and ring amplifiers of a subscriber line interface circuit. Each has a first polarity input coupled to a first current flow path to which a DC voltage is coupled. The arrangement includes first and second current sources and a voltage regulator.

At the outset, it is to be noted that there are no tip and ring amplifiers anywhere disclosed in the patent to Takato et al 4,631,366, nor is there a voltage regulator recited anywhere in the patent.

The statement of the rejection regarding Claim 15 on pages 2 and 3 of the outstanding Office Action appears to misstate what is disclosed in the patent to Takato et al, in an attempt to show correspondence between the language of Claim 15 and portions of the patent to Takato.

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In the first instance, the amplifiers A_0 and A_1 of Takato et al are operational amplifiers which make up, together with other circuit components, respective current sources in the upper and lower portions of Figure 6. The upper current source includes resistor R_{e0} , R_{f0} , operational amplifier A_0 and transistor Tr_0 . In the lower portion of Figure 6, the current source is configured of resistor R_{e1} , resistor R_{f1} , operational amplifier A_1 and transistor Tr_1 . Neither of the amplifiers A_0 and A_1 is a tip or ring amplifier. It forms part of a current source with a respective transistor for which it supplies a base drive.

The patentees also make no mention of a voltage regulator. Takato et al does disclose an intermediate voltage output circuit IV which, according to the description, operates to produce an intermediate voltage between the first and second subscriber lines A and B. See the description in Column 5, Lines 21-28, for example.

According to the definition of the invention in Claim 15, a first current source is operative to supply to a second polarity input node of the tip amplifier a first current derived in accordance with that flowing through the first current flow path. This is shown in Figure 4 of the drawings of the present application wherein current source 41T is coupled to a second polarity (-) node of the tip amplifier 10T. Similarly, a second current source 41R supplies to a second polarity input of the ring amplifier 10R a second current derived in accordance with that flowing through the first current flow path. The first current flow path is that from the battery node 24 through resistor 23, node 21, resistor 22 and the connection to ground 25.

In re Patent Application of:

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Finally, Claim 15 specifies a voltage regulator shown as voltage regulator 50 in Figure 4. This voltage regulator is coupled with the first current flow path (just described) and is operative to regulate the voltage at the first polarity input of the tip/ring amplifier (namely the inputs 11T and 11R), to a regulated voltage value V_{reg} . As a result, the magnitudes of the first and second currents supplied by the first and second current sources 41T and 41 R will be based upon the regulated voltage V_{reg} , irrespective of the DC voltage exceeding the regulated voltage value V_{reg} .

There is nothing at all in the circuitry of the patent to Takato et al which corresponds to the circuitry, or functions the same as the components of Claim 15.

As noted above, amplifiers A_0 and A_1 of Takato et al are not tip and ring amplifiers, but are operational amplifiers that form part of current generators with the respective transistors Tr_0 and Tr_1 .

There is no voltage regulator employed in the circuit of Takato et al, much less one which regulates the voltage at first polarity inputs of the tip and ring amplifiers (non-existent in Takato et al) to regulated value V_{reg} such that the magnitudes of the first and second currents are based upon the regulated voltage.

As to Claim 16, the circuit arrangement of Claim 15 is further delimited by reciting first and second low pass filters which are respectively coupled with a first and second current sources. These filters are operative to pass DC supply energy

In re Patent Application of:

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Serial No. 10/090,291

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and to prevent noise from being introduced into the voice paths of the tip and ring amplifiers. Such filters are shown at 43T and 43R in Figure 4 of the drawings of the present application, for example.

The statement of the rejection makes reference to resistors R_{s0} and R_{s1} and capacitors C_0 and C_1 . These are described in Column 6, Lines 35-41 and Lines 52 and 53 of Takato et al. Rather than being connected to pass DC supply energy, the capacitors C_0 and C_1 of Takato et al effectively block that energy. As the patent states, the values of the capacitors are selected to be negligible impedance in terms of AC. However, in terms of DC, they perform a blocking function. Simply put, the filters are high pass filters, not low pass filters.

Claim 17 further delimits Claim 15 by setting forth that the first current flow path comprises a voltage divider. This voltage divider has an input terminal to which the DC input voltages apply. It also has a voltage dividing node of which the first polarity inputs of the tip and ring amplifiers are coupled. Claim 17 further recites that the voltage regulator is coupled to the input terminal of the voltage divider.

First of all, as noted above, there is no voltage regulator in the circuit of Takato et al. Takato et al does describe a voltage divider comprising resistors R_{a1} , R_{b1} , R_{b0} and R_{a0} connected between $-V_{BB}$ and ground. The voltage follower amplifier A_2 has its output connected between the common connection of resistors R_{B0} and R_{B1} . But there are no tip and ring amplifiers to be connected to any other portion of the voltage divider. As noted above, op amplifiers A_0 and A_1 are not

In re Patent Application of:

ENRIQUEZ ET AL.

Serial No. 10/090,291

Filed: March 4, 2002

tip and ring amplifiers, they are part of the current sources which supply constant currents to circuit paths B and A.

With regard to the details of Claim 18, the current sources of Takato et al are operative to supply first and second currents in accordance with currents flowing through the voltage divider described above. However, as noted previously, the current sources are not connected with the remainder of the circuit as specified in Claim 15, upon which Claim 18 ultimately depends.

Claim 19 specifies that the first current flow path comprises a voltage divider having an input terminal connected to a DC input voltage and a voltage dividing node which is connected to first polarity inputs of the tip and ring amplifiers. Since there are no tip and ring amplifiers in Takato et al, this feature of the claim does not read upon Takato et al.

Claim 19 further specifies that the voltage regulator is coupled to the voltage dividing node of the voltage divider. However, as noted above, there is no voltage regulator in the circuit of Takato et al so that this portion as claimed is not satisfied by the reference.

Claim 20 specifies that the first and second current sources are operative to supply first and second currents in accordance with that flowing through the voltage divider between the voltage dividing node and the reference node. In Takato et al, for the resistor ladder between battery $-V_{BB}$ and ground, there are voltage divider pick off points for the amplifiers A_0 and A_1 to drive the transistors Tr_0 and Tr_1 to produce first and second output currents. This does not remedy the deficiency of Claim 20 relative to the claims upon which it depends, however.

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Serial No. 10/090,291

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Applicants' Claims 1-6 and 8-14 are believed to be patentable for the same reasons that Claims 15-20 are patentable, as discussed above. Claims 1-7 are method claims. Claim 1 essentially corresponds to the features of Claim 15 in method form, again reciting the coupling of a first polarity input of a tip/ring amplifier to a first current flow path and coupling a second polarity input of the tip/ring amplifier to a second current flow path. The claim also calls for regulating the voltage at the first polarity input of the tip/ring amplifier to a regulated voltage value V_{reg} , something that is not accomplished in Takato et al.

Claims 8-14 recite a circuit arrangement that includes a current source which is operative to supply, to a second polarity input of a tip/ring amplifier, a current derived in accordance with that flowing through first current flow path. Since there is no tip/ring amplifier in Takato et al., there is no corresponding current source connected thereto as recited in Claim 8.

Claim 8 also calls for a voltage regulator coupled with a first current flow path and regulating the voltage at the first polarity input of the tip/ring amplifier to a regulated voltage value V_{reg} . There being no voltage regulator in Takato et al., this feature of the claim is also absent from the reference. The remaining claims dependent upon Claim 1 and Claim 8 are also believed to be patentable for the reasons discussed above in connection with the claims dependent upon Claim 15.

In the absence of a citation of prior art which teaches or suggests applicants' invention, it is respectfully submitted that

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Serial No. 10/090,291

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Claims 1-15 are in condition for allowance. A notice to that effect, accordingly, is earnestly solicited.

Should any minor informalities need to be addressed, the Examiner is encouraged to contact the undersigned attorney at the telephone number listed below.

Please charge any shortage in fees due in connection with the filing of this paper, including Extension of Time fees, to Deposit Account No. 01-0484 and please credit any excess fees to such deposit account.

Respectfully submitted,



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